

From: [Chen, Isaac](#)
To: robert.kuehn@shell.com
Subject: RE: NPDES GMG 290000 Industry Study SAP Submittal
Date: Wednesday, July 10, 2013 4:14:00 PM

Thanks, Robert.

From: robert.kuehn@shell.com [mailto:robert.kuehn@shell.com]
Sent: Wednesday, July 10, 2013 3:04 PM
To: Chen, Isaac
Subject: RE: NPDES GMG 290000 Industry Study SAP Submittal

Isaac- below are our initial thoughts in **red, italic text**.

Please let me know if you have any other questions, and thanks again for reviewing the SAP.

Rob Kuehn
On behalf of the Offshore Operator Committee
JIP PW/BM Characterization Study

From: Chen, Isaac [<mailto:Chen.Isaac@epa.gov>]
Sent: Monday, July 01, 2013 1:42 PM
To: Kuehn, Robert B SEPCO-UAS/E/USOFF
Subject: RE: NPDES GMG 290000 Industry Study SAP Submittal

Robert,

I am reviewing the SAP for PW and WBM characterization study. I am okay if unused WBM is used for study when the collection of used WBM samples become impracticable or mud samples are not representative. I have some questions which are not directly related to the study.

- 1) There are about 4000 active platforms in the study areas. But, Appendix B, Table 4 identifies 758 unique PW outfalls. Is 758 the number of PW outfalls in the Western/Central GOM?

Not all platforms discharge produced water. The 758 represents the number of outfalls that the potential study participants have in operation. There may be more but OOC has never attempted to count them all because we cannot require companies to submit information. We think that an accurate number of outfalls could only come from a review of all DMRs at EPA. Some unrelated prior work indicates there may be upwards of 818 produced water outfalls in the OCS.

- 2) Table 3 identifies 624 wells drilled in 2009-2012. Could we assume that about 1040 wells will be drilled within the 5-year permit term?

We don't think so. Well drilling is fairly variable. Also, new BOEM rules require extra effort and time to get drilling permits approved. Finally, given the deadline of the Characterization

study (no later than three years from the effective date of the permit), we don't have all 5 years of the permit in which to collect samples.

- 3) Based on the numbers of PW outfalls and WBM wells, what is the estimated quantity of PW and of WBM to be discharged during a 5-year period of permit term? Or, what is the average discharge volume from each PW outfall and WBM volume from each well during the 5-year permit term?

PW discharges range from 1 bbl/day to many thousands per day. Also, PW rates from any given platform can vary significantly, both instantaneously (e.g. due to wells being taken on and off production) as well as over time (e.g. as wells grow older, PW rates generally increase as the well's "water out"). Some unrelated prior work indicates that for the 818 PW dischargers in the GOM mentioned above, the average flow over a 3 year period was 2398 bbl/day per outfall, with standard deviation of 4450 bbl/day, a max of 40k bbl/day and minimum of 1 bbl/day.

As for WBM volumes, again its highly variable depending on water depth, well design, well depth, when the riser is installed, etc. Estimates of required WBM usage on a well are required to be submitted to BOEM in their permit applications. OOC has never collated water based mud discharge volumes. The EPA had a model well and also annual discharge estimates for both the 1993 and 2000 ELGs.

Thanks.

Isaac Chen
214-665-7364

From: robert.kuehn@shell.com [<mailto:robert.kuehn@shell.com>]
Sent: Thursday, June 27, 2013 11:29 AM
To: Chen, Isaac; Shaikh, Taimur
Cc: June.Mire@tetratech.com
Subject: NPDES GMG 290000 Industry Study SAP Submittal
Importance: High

Gentlemen- please find attached a cover letter and sampling analysis plan (SAP) for the Joint Industry Characterization Study for produced water and water based mud, for your review and approval.

Thanks for your support developing the SAP. If you have any questions, please contact me, or Dr. June Mire of Tetra Tech Inc. at (504) 834-6276.

Rob Kuehn
On behalf of the Offshore Operators Committee

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